

We claim:

1. A throttle control mechanism for an engine driven pump, said pump having a fluid intake port and a fluid discharge port, said throttle control mechanism comprising:
  - a) an elongate cylinder having a first open end and a second closed end, said first end closed and fluidly sealed by an end block,
  - b) a fluid chamber within said end block, said fluid chamber in fluid communication with said cylinder,
  - c) a sliding piston within said cylinder, said piston including an axially extending throttle activation rod extending through said end block, said throttle activation rod connected to the throttle of said engine whereby movement of said piston, within said cylinder, causes movement of said throttle activation rod and said engine throttle,
  - d) sealing means between said piston and said cylinder,
  - e) biasing means between said piston and said closed end of said cylinder whereby said piston is biased against said end block,
  - f) a first fluid communicating conduit between said fluid chamber, within said end block, and the discharge port of said pump,
  - g) said first fluid communicating conduit having a pressure relief valve therein whereby fluid will flow from said pump discharge port to said fluid chamber within said end block, when the fluid pressure within said pump discharge port exceeds a predetermined pressure,
  - h) a second fluid communicating conduit fluidly communicating with said first fluid communicating conduit between said relief valve and said fluid chamber within said end block, said second fluid communicating conduit fluidly communicating between said first fluid communicating conduit and the atmosphere,
  - i) a fluid restricting orifice within said second fluid communicating conduit whereby said orifice creates a reduced fluid pressure within said first and second fluid communicating conduits and said fluid chamber, within said end block, as fluid passes therethrough.
2. The throttle control mechanism as claimed in claim 1 including:

a) an electrically operated three way exhaust valve positioned, within said second fluid communicating conduit, between said orifice and said first fluid communicating conduit, said exhaust valve having one fluid inlet port and a first and second exhaust port, said first exhaust port normally open and fluidly communicating with said orifice, said second exhaust port, normally in its closed and having means for opening said port upon demand,

b) a pressure sensing device for sensing fluid pressure within said second fluid communicating conduit, between said first fluid communicating conduit and said three way exhaust valve, whereby upon sensing a predetermined fluid pressure within said second fluid communication conduit said pressure sensing device opens said second exhaust port of said three way exhaust valve.

3. The throttle control mechanism as claimed in claim 1 including a fluid damping reservoir in fluid communication with said cylinder.

4. A building sprinkler system including the throttle control mechanism of claim 1.

5. A building sprinkler system having a pump, said pump activated by an internal combustion engine:

a) said engine having a throttle; said throttle attached to a control said control responsive to the output pressure of said pump and adapted to reduce engine speed at a predetermined pressure.

6. The building sprinkler system of claim 5 wherein said control includes a member connected with said throttle, said member movable in response to a fluid pressure condition acting thereon, said control is operatively connected with an output side of said pump via a pressure reducing system, such that when the output pressure of said pump reaches said predetermined pressure the pressure reducing system causes the fluid pressure condition to act on said member and said member moves to effect movement of the throttle and reduction of engine speed, wherein the fluid pressure condition is a pressure substantially reduced from the predetermined pressure.

7. The building sprinkler system of claim 6 wherein the member comprises a piston that is biased into a position to locate the throttle for a normal operating speed, and the fluid pressure condition acting on the piston overcomes the bias on the piston.

8. The building sprinkler system of claim 6 wherein the pressure reducing system includes a fluid path between the output side of said pump and the control, the fluid path including a pressure relief valve therein which opens at the predetermined pressure to permit fluid flow from a pump side of said pressure relief valve to a control side of said pressure relief valve, the pressure reducing system further including a fluid release orifice associated with a portion of the fluid path to the control side of the pressure relief valve, the fluid release orifice acting to reduce pressure along the portion of the fluid path.

9. The building sprinkler claimed in claim 5 wherein said control has a piston said piston is linked to said throttle wherein said piston moves in response to said output pressure.

10. The sprinkler system claimed in claim 9 wherein said piston is spring biased.

11. The sprinkler system claimed in claim 10 wherein said piston rides in a cylinder having an end wall; and a spring is located between said end wall and said piston urging said piston away from said end wall.

12. The sprinkler system claimed in claim 11 wherein said cylinder includes an end cap and wherein further comprising at least one shim between said cap and said spring.

13. The sprinkler system claimed in claim 9 wherein said piston includes a first cylindrical portion which rides in a cylindrical chamber wherein water from said pump is directed to said chamber and being effective to move said piston at said predetermined pressure.

14. The sprinkler system claimed in claim 13 wherein said piston has a stop member wider than said cylindrical chamber.

15. A sprinkler system having a series of components said components having a rated pressure capacity;

a) a pump connected to an internal combustion engine and having pressure capability which when combined with a system suction pressure exceeds said rated pressure of said components;

b) throttle control responsive to water pressure from said pump adapted to

prevent said water pressure from said pump from exceeding the rated pressure of said components.

16. The sprinkler system claimed in claim 15 wherein said piston further rides in a cylindrical chamber having an end portion wherein said piston extends beyond said end portion and has a stop member having a diameter greater than the diameter of said cylindrical chamber.

17. The sprinkler system of claim 15 wherein the throttle control includes a member connected with said throttle, said member movable in response to a fluid pressure condition acting thereon, said throttle control includes a pressure reducing system associated with an output side of said pump, when said pressure from said pump reaches a threshold pressure said throttle control causes the fluid pressure condition to act on said member, wherein said fluid pressure condition is a pressure substantially reduced from the threshold pressure.

18. The sprinkler system of claim 17 wherein said fluid pressure condition acts on a first side of said member, the throttle control includes a damping mechanism to a second side of said member for damping fluid pressure surges applied to said first side of said member.

19. The sprinkler system of claim 18 wherein the damping mechanism comprises a fluid chamber that communicates with a fluid damping reservoir via an orifice.

20. In a sprinkler system including an engine that drives a pump having an output associated with at least one fluid distribution line of the sprinkler system, the engine including a throttle for engine speed control, a method of controlling engine speed in order to prevent overpressure conditions within the fluid distribution line, the method comprising the steps of:

- a) when an output pressure of the pump reaches a threshold high pressure, responsively providing fluid communication between the output side of the pump and a throttle control system;

- b) the throttle control system produces a controlled backpressure in response to the fluid communication with the output side of the pump;

- c) the controlled backpressure is applied to a movable member to cause the movable member to move;

d) the movable member, which is operatively connected with the throttle, moves the throttle to reduce engine speed when moved per step c);

wherein the controlled backpressure is substantially less than the output pressure of the pump.

21. The method of claim 20 wherein the controlled backpressure is less than fifty percent (50%) of the threshold high pressure.
22. The method of claim 20 wherein during normal operation the controlled backpressure is less than thirty percent (30%) of the threshold high pressure.
23. The method of claim 20 wherein during normal operation the controlled backpressure is less than twenty percent (20%) of the threshold high pressure.
24. The method of claim 20 comprising the further step of detecting a backpressure overpressure condition in the throttle control system and responsively relieving the backpressure overpressure condition releasing fluid from the throttle control system.
25. The method of claim 20 wherein the controlled backpressure produced in step b) varies as the output pressure of the pump varies.
26. The method of claim 25 wherein a variance in the output pressure of the pump over a certain range results in production of the controlled backpressure over a backpressure range that is at least two times larger than the certain range.
27. The method of claim 26 wherein the backpressure range that is at least three times larger than the certain range.
28. The method of claim 27 wherein the backpressure range that is at least four times larger than the certain range.
29. A pressure responsive internal combustion engine, comprising:
  - a throttle for adjusting engine speed;
  - a rotating output for providing drive power when connected to a component;
  - a throttle control integrated with the engine and including a movable member,a liquid receiving chamber adjacent the movable member, a liquid input and a liquid output, the movable member operatively connected with the throttle, the throttle control adapted to respond to liquid pressure applied at the liquid input so that:
  - a) when the liquid pressure applied at the liquid input reaches a

threshold high pressure, liquid communication between the liquid input and liquid receiving chamber and the liquid output is responsively provided;

b) the liquid output responsively releases some liquid to produce a controlled pressure in the liquid receiving chamber;

c) the controlled pressure causes the movable member to move thereby causing the throttle to move in a direction to reduce engine speed;

wherein the controlled pressure that causes movement of the moveable member is substantially less than the threshold high pressure.

30. The engine of claim 29 wherein during normal operation the controlled pressure is less than fifty percent (50%) of the threshold high pressure.

31. The engine of claim 30 wherein during normal operation the controlled pressure is less than thirty percent (30%) of the threshold high pressure.

32. The engine of claim 31 wherein during normal operation the controlled pressure is less than twenty percent (20%) of the threshold high pressure.

33. The engine of claim 29 wherein the controlled pressure varies as the liquid pressure applied to the liquid input varies above the threshold high pressure.

34. The engine of claim 33 wherein a variance in the liquid pressure applied to the liquid input over a certain range results in production of the controlled pressure over a pressure range that is at least two times larger than the certain range.

35. The engine of claim 34 wherein the pressure range that is at least three times larger than the certain range.

36. The engine of claim 35 wherein the pressure range that is at least four times larger than the certain range.